

Wireless Communication Device Use in 18 Texas Cities: 2021 Observational Survey

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**Conducted on behalf of
Texas Department of Transportation
Robbi Smith, TxDOT, Program Manager**

in cooperation with

**The National Highway Traffic Safety Administration
U. S. Department of Transportation**

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TABLE OF CONTENTS

Introduction.....	1
Survey Method.....	2
Sample Design	2
Definitions.....	3
Data Collection	4
Observation Procedure.....	5
Results.....	5
Survey Results	5
Comparison of 2021 to Prior Years' WCD Survey Results..	7
Texting While Stopped	9
Site Characteristics.....	10
Driver Characteristics	12
Summary and Key Results.....	15
References.....	16
Appendix A: Survey Observation Form.....	17
Appendix B: Data Collection Protocol.....	18

LIST OF FIGURES

Figure 1. Location of 18 Survey Cities.....	3
Figure 2. Mobile Communication Device Use by City	6
Figure 3. Talking and Texting by City.....	6
Figure 4. Texting While Stopped versus Moving.....	10
Figure 5. WCD Use by Vehicle Type.....	12
Figure 6. WCD Use by Gender.....	13
Figure 7. WCD Use by Age.....	13

LIST OF TABLES

Table 1. Wireless Communication Device Use by Year.....	2
Table 2. WCD Percent Use: 2018 - 2021	7
Table 3. Texting: 2020 and 2021	8
Table 4. Talking on Cell Phone: 2020 and 2021	9
Table 5. WCD Use by Type of Intersection Road.....	11
Table 6. WCD Use by Time of Day: Peak and Non-Peak Hours	12
Table 7. WCD Use by Race/Ethnicity.....	15
Table 8. WCD Use by Presence of Front Passenger.....	15

TEXAS DRIVER WIRELESS COMMUNICATION DEVICE USE: 2021 OBSERVATIONAL SURVEY

INTRODUCTION

The serious consequences of distracted driving due to wireless communication device (WCD) use are largely undisputed. Crash data substantiate the need for concern. There were 3,842 motor vehicle crashes on Texas roadways in 2019 where known cell/mobile phone use was cited as a contributing factor; with 61 of these crashes resulting in at least one fatality and another 653 crashes with at least one serious injury [1]. In addition to the statewide texting ban that was enacted by the Texas Legislature in 2017, distracted driving is being addressed aggressively through the Texas Traffic Safety Program, working with safety partners and stakeholders throughout the state.

At the national level, the National Highway Traffic Safety Administration (NHTSA) has a long-term goal to eliminate crashes attributable to distracted driving, which has been termed an epidemic problem. Program goals were established and a Plan to Eliminate Crashes Due to Distraction was developed in 2010. This plan has four major initiatives, the first being to improve understanding of the problem through data collection, and specifically by conducting annual observational surveys [2].

The Texas A&M Transportation Institute (TTI) to date has conducted nine annual Texas statewide surveys of mobile communication device use. These annual surveys showed an increase from 8.2 percent in 2016 to 8.7 percent in 2017 in driver cell phone use. In the first year after the statewide texting ban went into effect, electronic device use overall did not decrease significantly, as the annual statewide survey estimated use at 8.6 percent. However, texting while driving increased from 4.6 to 5.1 percent across the state [3]. The most recent survey, conducted in 2021, found mobile communication device use statewide at 8.5 percent, with texting while driving at 5.4 percent and talking on hand-held cell phones while driving at 2.9 percent [4]. These rates compare to the most recent national survey rates of 2.9 percent texting and 2.9 percent hand-held cell phone use across the country in 2019 [5], indicating a higher than national use rate for texting and cell phone use in Texas.

Table 1 shows mobile communication device use by year for Texas as measured by the survey to estimate statewide use. Table 1 also shows the national survey estimates of driver electronic device use. These percentages are reported for Texas in the most recent report [4], and for the U.S. in prior NHTSA Traffic Safety Facts reports for each survey year.

Table 1. Wireless Communication Device Use by Year

% Use	2013	2014	2015	2016	2017	2018	2019	2020	2021
Cell Phone									
Texas	6.7	5.9	5.0	4.7	4.8	4.0	3.5	3.1	2.9
U.S.	4.6	4.3	3.8	3.3	2.9	3.2	2.9	N/A	N/A
Texting									
Texas	3.6	3.7	3.5	3.6	4.6	5.1	5.3	5.1	5.4
U.S.	1.7	2.2	2.2	2.1	2.0	2.1	2.9	N/A	N/A

In addition to tracking statewide electronic device use over time, TTI began in 2018 to measure WCD use at the city level. These urban area surveys are intended to provide greater detail regarding variations in WCD use by looking at characteristics of the sites (roadways, type of intersection, volume, etc.), user demographics, time of day, type of vehicle and passengers present. Importantly, city-level data also provide a measure of use over time. As with seat belt surveys in urban areas, this is essential for assessing the effectiveness of laws and ordinances, strategies and programs, trends in WCD use by occupants, and indications of where efforts could be focused effectively. This report documents the results of the 2021 survey and compares them with 2018-2020 WCD use estimates from the same locations.

SURVEY METHOD

WCD use can be measured using observational surveys of drivers, which provide more reliable use rates than self-report surveys in which individuals are asked to report their driving and cell phone use behavior typically or recently. As mentioned above, during the past nine years, TTI has conducted an observational survey to track various types of mobile communication device use throughout Texas. The survey is patterned after the NHTSA annual survey that includes a measure of driver electronic device use, known as the National Occupant Protection Use Survey (NOPUS). This nationwide, probability-based observation survey includes safety belt, child restraint, and driver electronic device use.

The NOPUS survey is useful for making comparisons with state use rates if data are collected using similar methodology. TTI used a similar observation procedure as the NOPUS and Texas statewide surveys to replicate observations in urban areas. However, the sample design for the urban-focused survey is not a probability design and serves a different purpose from the statewide survey, which is to provide city-specific use data rather than a use rate generalized to the state overall. The sections below describe the sample design and survey protocol.

Sample Design

TTI conducted observational surveys of WCD use in the same 18 Texas cities where occupant protections surveys are conducted annually for TxDOT, which can be seen in Figure 1.

Each city was divided into six sections using a grid overlay. An intersection with reasonable traffic volume was selected from each section from which to collect data. A quota sample of 200 vehicle drivers per site for the six intersections was set for each city for a sample size of 1200 drivers per city. At each site, a portion of the site sample was obtained from the primary leg of the intersection and a portion was obtained from one of the secondary legs. This sampling scheme was intended to produce data from higher volume urban arterials, as well as from collector and residential areas. The proportions ranged from 60/40 to 80/20 for primary/secondary legs, and were determined based on the proportional volume of traffic on the intersection legs.

Survey cities:

- Abilene
- Amarillo
- Austin
- Beaumont
- Brownsville
- Bryan/College Station
- Corpus Christi
- Dallas
- El Paso
- Ft. Worth
- Houston
- Laredo
- Lubbock
- Midland
- San Antonio
- Tyler
- Waco
- Wichita Falls

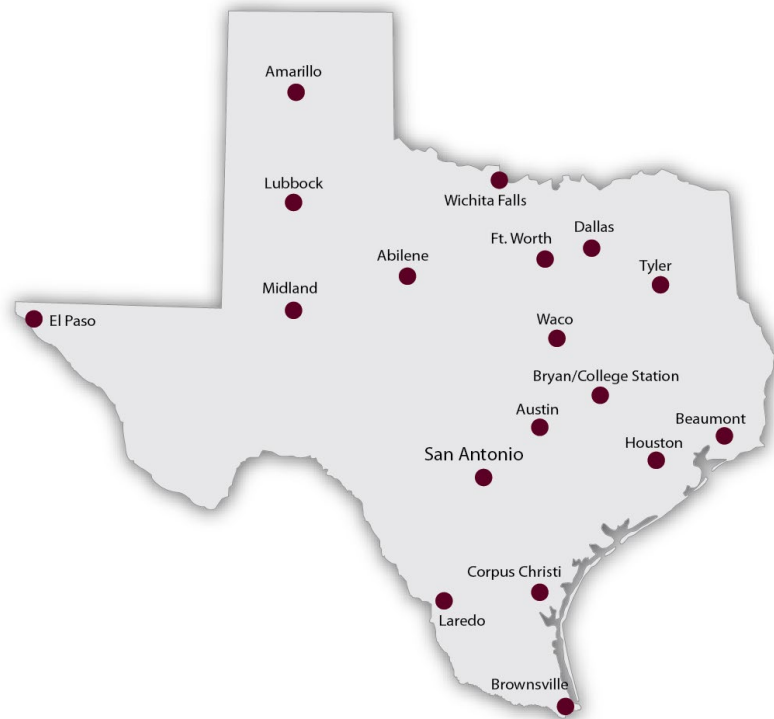


Figure 1. Location of 18 Survey Cities

Definitions

Wireless device use is classified in NOPUS in three ways:

- 1) Driver holding phone to their ear while driving;
- 2) Driver speaking with visible headsets on while driving;
- 3) Driver manipulating hand-held device while driving.

The Texas urban area survey incorporated the same three categories. The fundamentals such as definitions and observation protocol were very similar to the NOPUS survey. However, some expansion of the NOPUS data collection was incorporated into the Texas protocol as follows:

1) Driver holding phone to their ear while driving

A driver holding a phone, talking into or appearing to be listening to the phone, was considered to be using a WCD, regardless of the position of the phone in relation to the driver's ear. In other words, the phone may have been in front of their mouth or face, or to the side of their head. The qualifying determination was the appearance of the driver talking or listening to the device. (Note that this did not include any hands-free phone devices.)

2) Driver speaking with visible headsets on while driving

Observers recorded WCD use if the driver was speaking into a headset with a microphone. The observer must see the driver speaking, and the presence alone of a headset or Bluetooth® device did not constitute use. As in the NOPUS survey, it is possible that a driver speaking with a headset and microphone or Bluetooth was not actively using the electronic device (i.e., if they were singing or talking to a passenger). Observers were instructed to attempt to discern and discount behavior that was obviously not talking or was directed toward someone else in the vehicle rather than into the wireless communication device.

3) Driver manipulating hand-held device while driving

Observers recorded data for drivers seen texting or typing on any hand-held electronic device. A separate code was used for drivers observed to be reading or otherwise manipulating a hand-held electronic device. Manipulation of devices via dashboard, steering wheel, or other controls was not included.

Data Collection

The NOPUS survey includes the following data collection parameters:

- Vehicles observed include all passenger vehicles. Passenger vehicles with commercial or government markings are excluded.
- Survey hours are between 7am and 6pm.
- Data is collected only for stopped vehicles at intersections with stop signs or traffic signals.
- The electronic device use data as defined above is recorded for the driver, right front passenger, and up to two passengers in the 1st row back seat.
- Surveyors record each occupant's gender, along with their subjective assessment of occupant age and race.

The TTI data collection included gender, estimated driver age (under 20; 20-65; and over 65 years), race/ethnicity (Anglo, African American, Hispanic, Asian, and Other Non-white), and vehicle type (limited to car and pickup designations). All passenger vehicles were included in the survey, with no exceptions for commercially marked or government vehicles. The survey data collection form is provided as Appendix A.

Wireless communication device use was recorded for drivers only. The presence of a right front seat passenger was noted, but no device use was recorded for right front seat passengers or for back seat passengers.

Observation Procedure

Using the same procedure as the statewide occupant restraint and mobile communication device use surveys, observers were instructed to follow a schedule indicating the day, start time, intersection name, site number, and direction of travel for observations. The hours of observation were between 7am and the 6pm hour.

Observers were instructed to observe stopping and moving vehicles from a stationary position at the intersection, using a procedure to systematically and accurately record WCD use for both moving and stopped vehicles. WCD use was determined from observation of vehicles in the nearest lane to the curb. The detailed survey protocol instructions are included as Appendix B in this report.

Surveyors were experienced TTI survey staff. Each of the six surveyors was individually trained to conduct this survey and practiced in pairs to validate the consistency of observation. The survey is complex due to the subtleties involved in discerning the difference between actual use of a wireless communication device and one simply being held. Additionally, because the protocol allowed for data to be collected from moving as well as stopped vehicles, the fast-paced observation required skill that was developed by sufficient practice.

RESULTS

Survey Results

Across the 18 cities, the total number of drivers observed was 21,600. Analysis of the 18 cities combined revealed that 8.3 percent of the drivers observed were either talking on their phones (3.0 percent) and/or texting (5.4 percent) while driving through or stopping at the intersection sites. This percentage is lower than the 8.5 percent use observed as the average across the 18 cities observed in 2020 and the statewide use of 8.5 percent observed in 2021, but is not a statistically significant difference. The change from 8.5 percent in 2020 to 8.3 percent in 2021 is from a decrease in cell phone use for talking from 3.3 percent in 2020 to 3.0 percent in 2021. The percent of drivers observed texting remained the same at 5.4 percent.

City-level results reveal variations in WCD use for the 18 cities, as indicated in Figures 2 and 3. The highest percentage of WCD use was observed in Amarillo at 10.7 percent. This year four cities had WCD use in the double-digit percentages. The lowest rate was in Corpus Christi at 4.8 percent.

Figure 3 shows percentages for texting and talking by city. Note that percentages broken into these categories may not total the WCD use rate for each city because the Other category

Figure 2. Wireless Communication Device Use by City

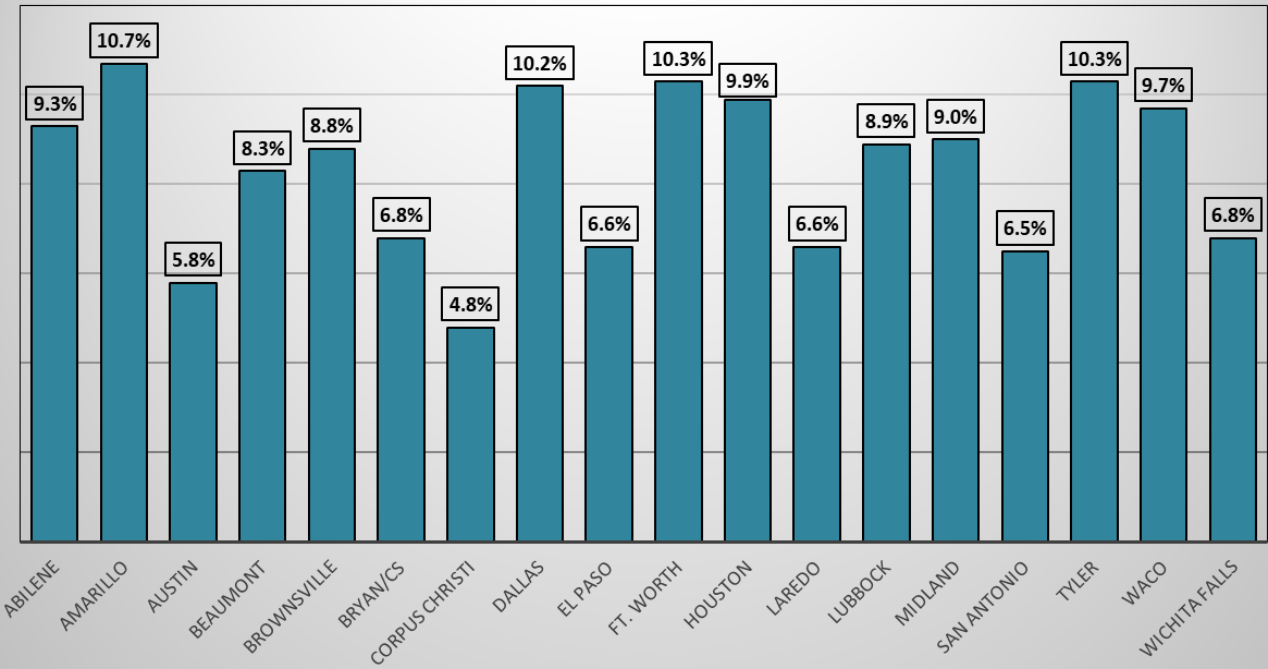
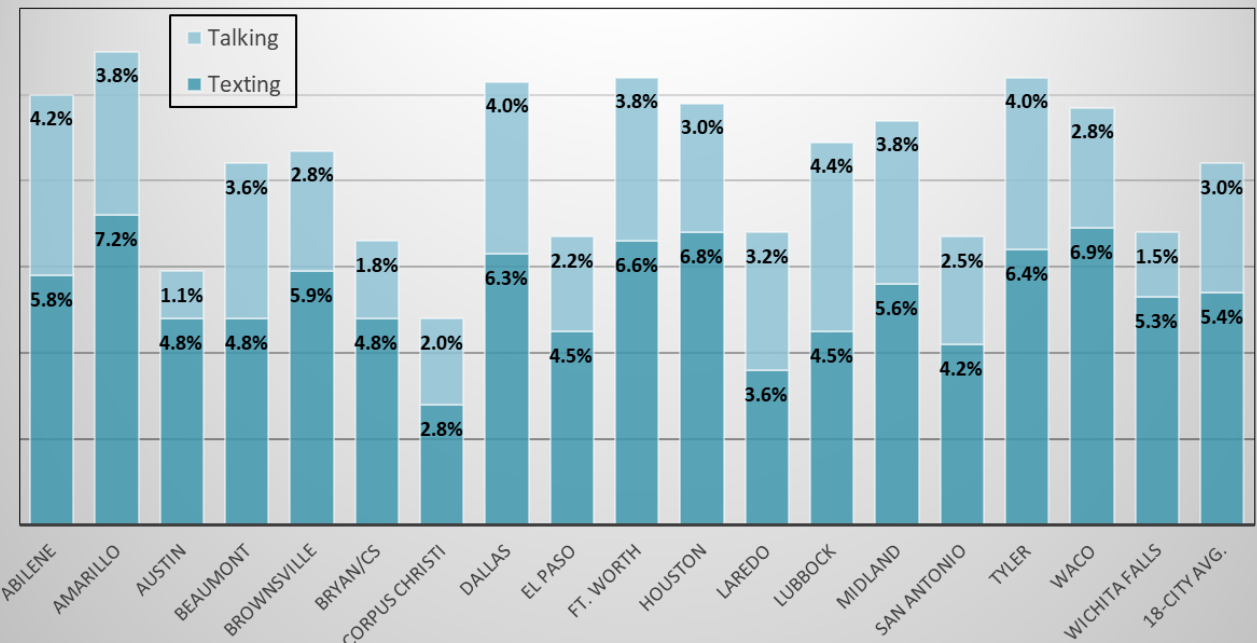


Figure 3. Talking and Texting by City



(tablets, laptops, or other wireless communication devices) are not included. The highest rate of texting was observed in Amarillo at 7.2 percent and lowest was observed in Corpus Christi at 2.8 percent. Driver texting was higher than talking on cell phones in every city. This may be due in part to larger numbers of drivers using in-vehicle Bluetooth systems for phone calls, as anecdotally reported by survey observers. Use of integrated hands-free devices in the vehicle was not included in the data collection.

Comparison of 2021 to Prior Years' WCD Survey Results. Table 2 provides city results for overall WCD use in 2018 – 2021, with 2021 rates compared to 2020. A statistically significant increase was noted for Abilene. Three of the 18 cities experienced statistically significant decreases in overall WCD use – Austin, Bryan/College Station, and Houston.

Table 2. WCD Percent Use: 2018 - 2021

City	2018	2019	2020	2021	Change in % 2020-2021*
Abilene	7.5	6.5	6.6	9.3	2.7*
Amarillo	6.6	6.2	9.1	10.7	1.6
Austin	5.1	7.3	7.6	5.8	-1.8
Beaumont	9.0	10.8	10.4	8.3	-2.1
Brownsville	9.8	6.5	8.1	8.8	0.7
Bryan/CS	6.8	8.3	10.6	6.8	-3.8*
Corpus Christi	4.8	4.3	5.1	4.8	-0.3
Dallas	8.5	10.1	9.3	10.2	0.9
El Paso	5.3	4.5	6.7	6.6	-0.1
Fort Worth	10.7	12.1	10.5	10.3	-0.2
Houston	14.4	12.7	13.0	9.9	-3.1*
Laredo	5.9	7.1	5.0	6.6	1.6
Lubbock	7.9	7.8	8.4	8.9	0.5
Midland	8.6	8.3	7.8	9.0	1.2
San Antonio	6.2	5.9	8.8	6.5	-2.3*
Tyler	10.2	10.0	9.3	10.3	1.0
Waco	8.0	7.8	9.1	9.7	0.6
Wichita Falls	4.7	6.9	8.0	6.8	-1.2
Total	7.8	7.9	8.5	8.3	-0.2

*Denotes statistically significant change 2021 from 2020, p<.05.

Tables 3 and 4 break out texting and talking by city, comparing 2021 results to 2020 city results. Ten of the 18 cities experienced increases in the percentage of drivers observed texting, with Abilene as the largest and only statistically significant increase. Eight experienced decreases in texting, with Bryan/College Station and San Antonio as statistically significant increases. The net result in the average across all cities was zero change.

Table 3. Texting: 2020 and 2021

City	% Texting 2020	% Texting 2021	Change in %
Abilene	3.0	5.8	*2.8
Amarillo	5.5	7.2	1.7
Austin	5.8	4.8	-1.0
Beaumont	5.9	4.8	-1.1
Brownsville	4.8	5.9	1.1
Bryan/CS	6.7	4.8	*-1.9
Corpus Christi	2.9	2.8	-0.1
Dallas	6.2	6.3	0.1
El Paso	4.8	4.5	-0.3
Fort Worth	6.0	6.6	0.6
Houston	8.8	6.8	-2.0
Laredo	3.3	3.6	0.3
Lubbock	3.8	4.5	0.7
Midland	4.4	5.6	1.2
San Antonio	7.0	4.2	*-2.8
Tyler	5.7	6.4	0.7
Waco	6.1	6.9	0.8
Wichita Falls	5.4	5.3	-0.1
Total	5.4	5.4	0.0

*Denotes statistically significant change 2021 from 2020, p<.05.

The 18-city average for cell phone use decreased from 2019 to 2020 by .3 percent. Ten of the 18 cities showed decreases in observed cell phone use, with the remaining eight cities increasing, none by a statistically significant degree. The largest increase was observed in Laredo of 1.5 percent. The largest decrease in cell phone use for talking of 2.0 percent was observed in Bryan/College Station, where incidentally a city ordinance banning driver hand-held cell phone use went into effect in the Fall of 2020.

Table 4. Talking on Cell Phone: 2020 and 2021

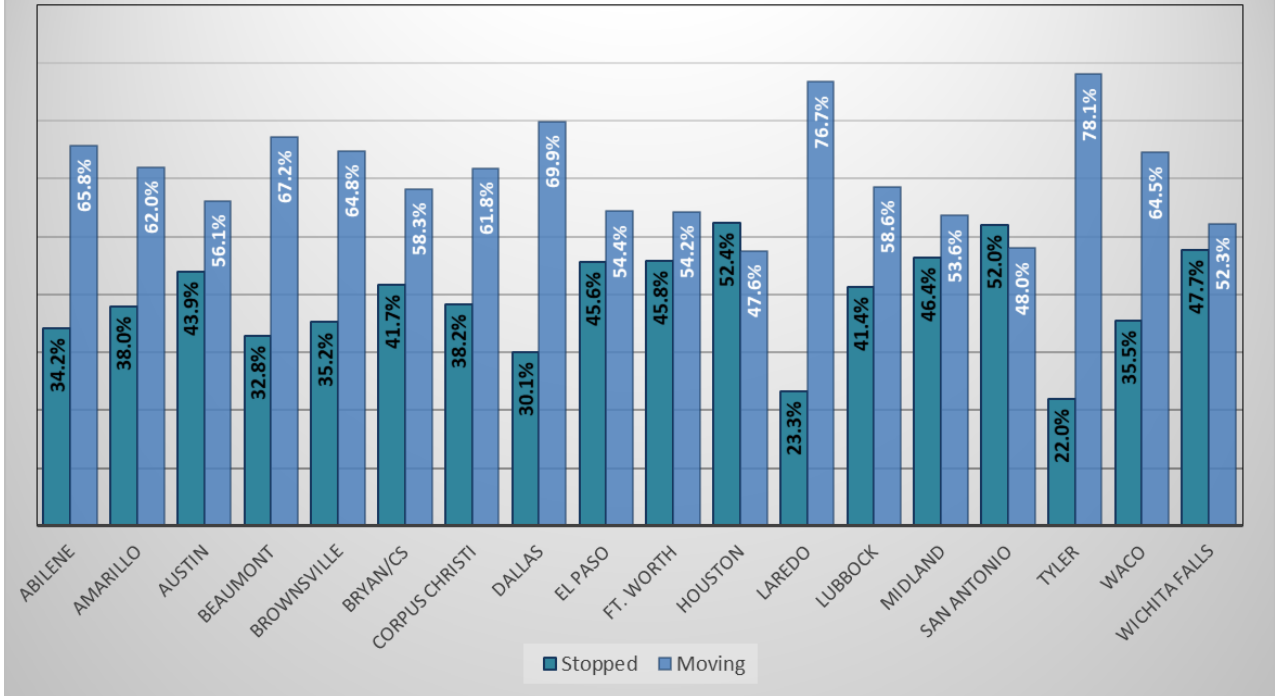
City	% Talking 2020	% Talking 2021	Change in %
Abilene	3.8	4.2	0.4
Amarillo	3.7	3.8	0.1
Austin	2.0	1.1	-0.9
Beaumont	4.8	3.6	-1.2
Brownsville	3.7	2.8	-0.9
Bryan/CS	3.8	1.8	*-2.0
Corpus Christi	2.2	2.0	-0.2
Dallas	3.3	4.0	0.7
El Paso	2.1	2.2	0.1
Fort Worth	4.8	3.8	-1.0
Houston	4.3	3.0	-1.3
Laredo	1.7	3.2	1.5
Lubbock	4.7	4.4	-0.3
Midland	3.3	3.8	0.5
San Antonio	1.9	2.5	0.6
Tyler	3.9	4.0	0.1
Waco	3.0	2.8	-0.2
Wichita Falls	2.2	1.5	-0.7
Total	3.3	3.0	-0.3

*Denotes statistically significant change 2021 from 2020, p<.05.

Texting While Stopped. As mentioned previously, the state law makes exception for texting while stopped. Figure 4 shows the proportion of drivers who were observed texting only while stopped at the intersection sites. All texters are represented in this graph, and moving and stopped drivers total 100 percent. A portion of drivers were observed texting at an intersection but while stopped and while moving. The percentages shown in Figure 4 are for drivers stopped and texting compared to drivers who were moving at any point while texting.

In all but two cities, texters were more frequently moving while texting. The two notable exceptions were Houston and San Antonio. Drivers were rarely observed talking on cell phones *only* while stopped. This behavior was continuous, that is most drivers talking on cell phones did not start or stop talking exclusively while stopped at the intersection. Of the 652 drivers observed talking on cell phones, only 16 did so while completely stopped.

Figure 4. Texting While Stopped versus Moving



Site Characteristics. A portion of the sample in each city came from a primary leg of the site intersection that carried higher average daily traffic. In most cases, the primary leg was a major arterial street of the city or section of the city. The secondary leg of the intersection, which carried a proportionately lower average daily traffic, was included in the sample to collect data representing slower speed limits or minor roadways. Table 5 shows the combined WCD use for primary and secondary road samples for each city. The comparison points to a consistently higher WCD use rate on secondary roads, with a 1.9 percentage point difference overall. At the city level, Dallas and Waco had higher WCD use on the higher volume legs of the intersection sites, Corpus Christi was approximately the same on both road types, and Tyler’s WCD use rate was exactly the same percentage on primary and secondary roads of the intersections surveyed.

Table 5. WCD Use by Type of Intersection Road

City	% WCD Use Primary Leg	% WCD Use Secondary Leg	% WCD Use for City
Abilene	8.4	11.9	9.3
Amarillo	10.6	11.0	10.7
Austin	5.7	6.4	5.8
Beaumont	8.1	9.1	8.3
Brownsville	8.4	10.0	8.8
Bryan/CS	6.0	9.3	6.8
Corpus Christi	4.8	4.7	4.8
Dallas	10.7	8.6	10.2
El Paso	5.5	9.7	6.6
Fort Worth	8.7	15.0	10.3
Houston	8.7	13.9	9.9
Laredo	6.2	7.6	6.6
Lubbock	8.6	10.0	8.9
Midland	7.7	13.0	9.0
San Antonio	6.0	8.1	6.5
Tyler	10.3	10.3	10.3
Waco	9.8	9.3	9.7
Wichita Falls	6.8	7.0	6.8
Total	7.8	9.7	8.3

The survey was conducted during daylight hours, with a morning site during the peak rush hour period, an afternoon site during the evening rush hour period, and four sites between the peak periods, with one of the four typically during the noon hour. Peak periods were defined as between 7am and 9am and between 4pm and 6pm. As shown in Table 6, use of WCD's was most prevalent during the afternoon rush hour period overall and in nine of the 18 cities. Corpus Christi, Houston, and Waco were the only three cities where morning peak WCD use was higher than afternoon and non-peak use. In Abilene, Brownsville, Ft. Worth, Midland, Tyler, Lubbock and Midland, non-peak WCD use was higher than both peak rates.

Table 6. WCD Use by Time of Day: Peak and Non-peak Hours

City	% WCD Use AM/PM Peak		% WCD Use Non-Peak	% WCD Use for City
	AM	PM		
Abilene	7.0	14.0	8.8	9.3
Amarillo	9.5	13.0	10.4	10.7
Austin	4.0	10.5	5.1	5.8
Beaumont	7.0	7.0	9.0	8.3
Brownsville	5.5	7.5	9.9	8.8
Bryan/CS	6.5	6.0	7.1	6.8
Corpus Christi	6.5	4.0	4.5	4.8
Dallas	5.0	13.5	10.6	10.2
El Paso	5.5	8.5	6.0	6.6
Ft. Worth	8.0	15.0	9.6	10.3
Houston	11.5	10.0	9.5	9.9
Laredo	6.0	7.5	6.5	6.6
Lubbock	5.0	6.5	10.5	8.9
Midland	8.0	6.0	10.0	9.0
San Antonio	6.5	6.0	6.6	6.5
Tyler	7.5	13.5	10.3	10.3
Waco	10.0	9.5	9.6	9.7
Wichita Falls	3.0	8.0	7.5	6.8
Total	7.3	9.3	8.4	8.3

Driver Characteristics. Several general driver variables were coded during the observations – car or pickup driver, estimate of age range, gender, and race/ethnicity. Figure 5 shows the comparison of texting and talking by car and pickup drivers. The data show car drivers were more likely to be texting than pickup drivers, and this year pickup drivers were slightly more likely to be talking on their phones than car drivers.

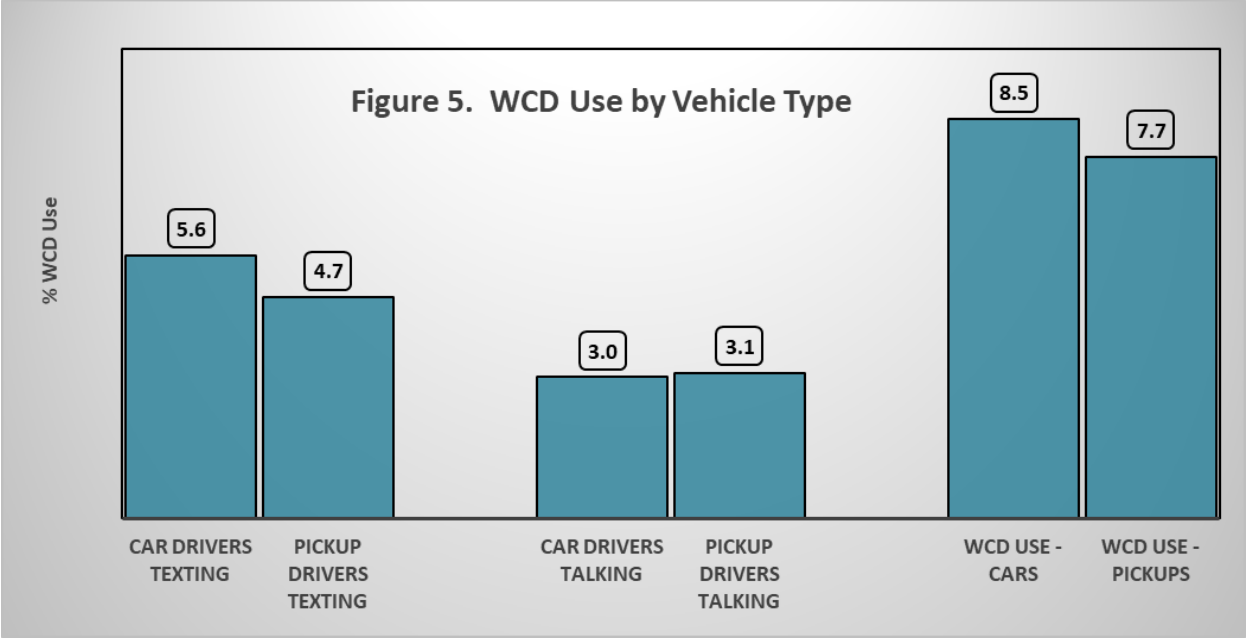
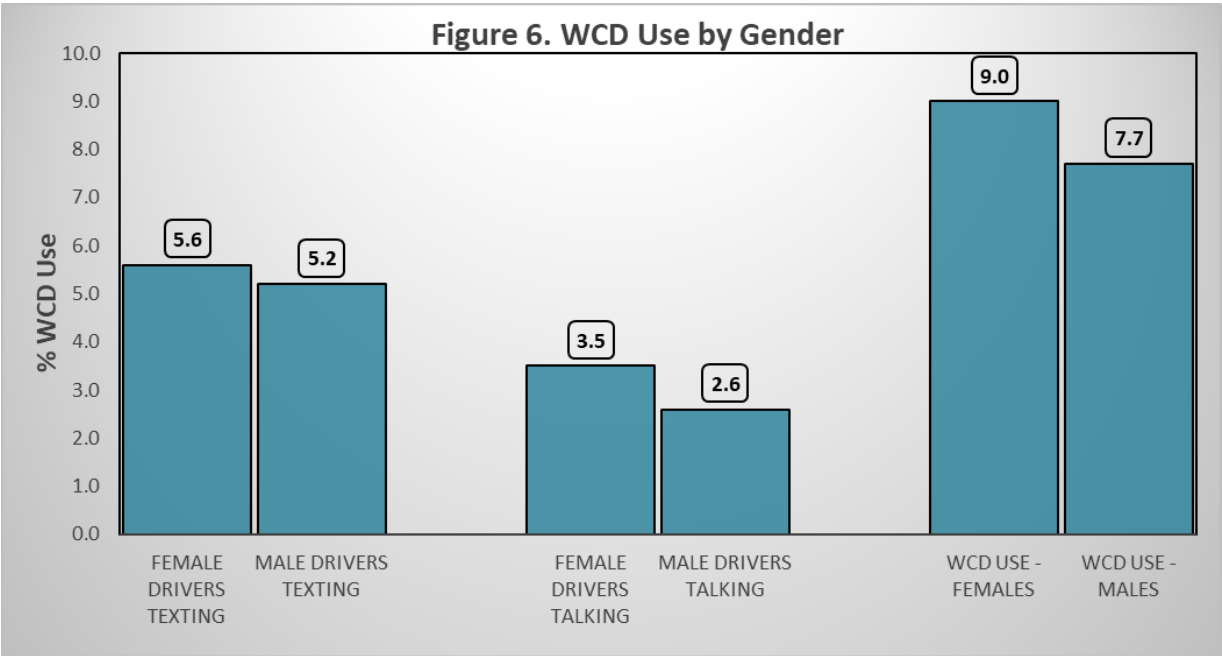
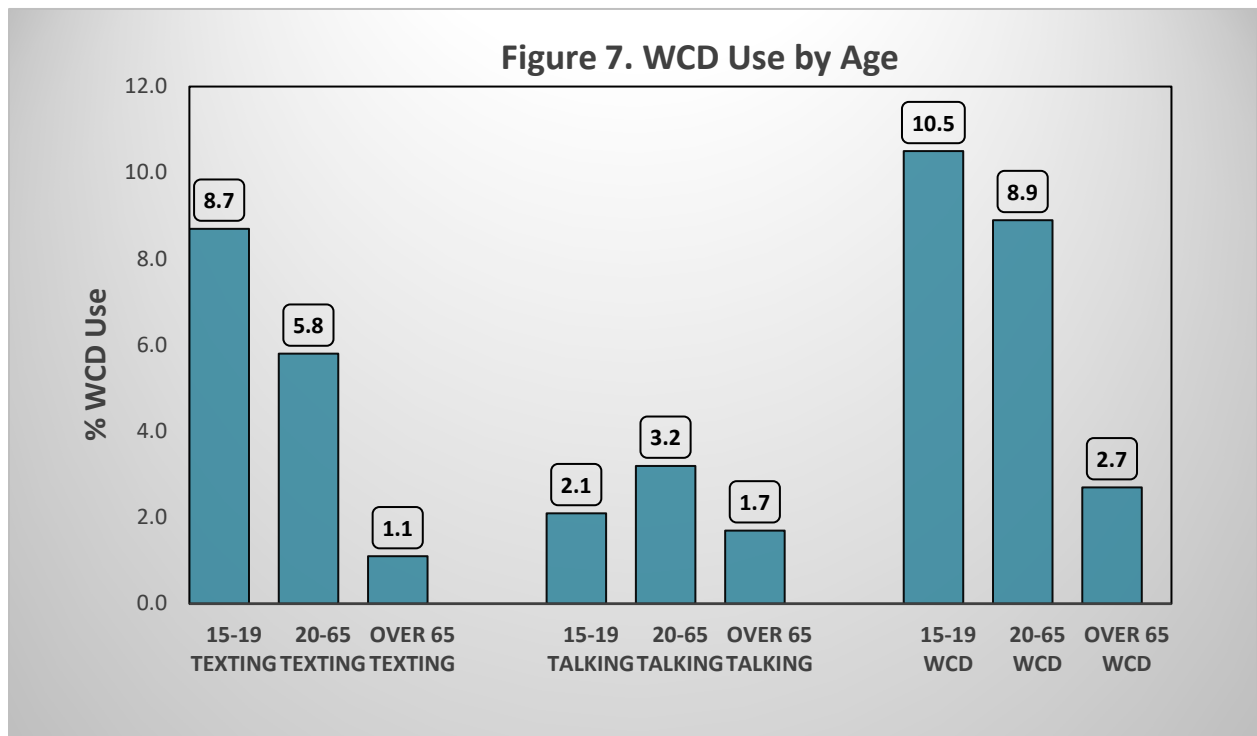


Figure 6 indicates that males and females differ more in texting than talking while driving. Female drivers texted at a rate of 5.6 percent and males texted at a rate of 5.2 percent, which is not a statistically significant difference. Additionally, of all female drivers observed, 3.5 percent were talking on a cell phone, compared to 2.6 percent of males talking on a cell phone, which is also not a statistically significant difference. Overall WCD use was higher among females than males, although not a statistically significant difference.



Differences in type of WCD use were also found by age. Figure 7 breaks down WCD use by age categories that were subjectively estimated by observers in the field. The highest rate of WCD use was observed by teens texting. Of all teen drivers observed, 10.5 percent were using a device for texting or talking. Only 26 senior drivers were observed texting of the 2,377 senior drivers observed. Adult drivers were more likely to be observed talking on cell phones than both teen and senior driver categories.



Observers noted race/ethnicity for each driver who could be seen clearly enough to make a subjective determination. As indicated in Table 7, African Americans were highest proportion of WCD users as a group at 10.7 percent of the sample of African Americans observed. Anglos were lowest users, relative to their representation in the sample of drivers observed.

Table 7. WCD Use by Race/Ethnicity

Race/Ethnicity	Sample Representation		WCD Use	
	N	%	N	%
Anglo	10,140	46.9	770	7.6
African-American	2,681	12.4	288	10.7
Hispanic	8,277	38.3	692	8.4
Asian	256	1.2	15	5.9
Other Non-White	137	0.6	14	8.8

WCD users were less likely to have a passenger in the front seat. Approximately 12 percent of drivers using a handheld communication device for texting or calling had a front seat passenger compared to approximately 23 percent of drivers with a passenger who were not using a WCD at the same intersections.

Table 8. WCD Use by Presence of Front Passenger

Occupant Position	Cell Phone Users		Texters		WCD Non-Users	
	%	N	%	N	%	N
Front seat passenger present	12.3	80	13.1	152	23.1	4972
No front seat passenger	87.7	572	86.9	1010	74.9	14837

SUMMARY AND KEY RESULTS

Urban area WCD use was measured in 18 cities by observation of 21,600 drivers at six intersections in each city. Texting and talking on a cell phone ranged from 4.8 percent of the drivers observed in Laredo to 10.7 percent of the drivers in Amarillo. Four cities had WCD use of 10 percent or more, and another four were nine percent or more. This means that if the percentage of WCD use was constant across each of these city, during daylight hours at any given time, as many as one in almost every ten vehicles encountered on the roadway has a driver distracted by an electronic device in these eight urban areas of Texas. The prevalence goes down to approximately one in 20 in Corpus Christi.

The lowest percentage of hand-held phone use for talking was observed in Austin (1.1 percent) and the highest observed was in Lubbock (4.4 percent). Lowest percent of texting was observed in Corpus Christi (2.8 percent) and highest was in Amarillo (7.2 percent). Three cities experienced a statistically significant decrease in WCD use from last year – Bryan/College Station, Houston, and San Antonio. Amarillo experienced a statistically significant increase in WCD use.

Characteristics of drivers, sites, situational factors, and WCD use were noted:

- Although legal in Texas to text while at a complete stop, drivers observed texting were more often moving. Very few drivers were observed talking on cell phones only while stopped.
- WCD use was observed with greater frequency on the secondary leg of the intersection than on the primary leg.
- Higher percentages of WCD use were observed in the afternoon rush hour period and non-rush hours than during the morning rush hour period.
- Car drivers were more likely to be texting than pickup drivers, while pickup drivers were likely to talk on cell phones at a slightly higher percentage than car drivers.
- Females were more likely to be driving while using a WCD than males.
- Teens were over-represented in the group of drivers observed texting.
- Drivers using WCDs were much less likely to have a front seat passenger in the vehicle.

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APPENDIX A - Survey Observation Form

URBAN MOBILE COMMUNICATION DEVICE SURVEY												
1. Observer						2. Date						
3. Site						4. City/Co						
5. Primary Leg						6. Secondary Leg						
7. Start Time						8. End Time						
						am-pm						
						am-pm						
Car No.	Stopped Traffic	DRIVER				Pick-up	WIRELESS DEVICE USE					
		15-19 TEEN	20-65 ADULT	>65 SENIOR	Talking		Text Typing	Text Reading	Other* Man	Front Passenger		
161												Not Sure
162												Sure
163												
164												Car
165												
166												
167												
168												
169												
170												
171												
172												
173												
174												
175												
176												
177												
178												
179												
180												
181												
182												P'up
183												
184												
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195												
196												
197												
198												
199												
200												

Codes: F = Female	W=White	H=Hispanic	*Other than phone
M = Male	B= Black	A=Asian	

APPENDIX B

Data Collection Protocol for Mobile Communication Device Use Urban Survey – 2020/21

Background

The Texas A&M Transportation Institute (TTI) will conduct a 2020/21 observational survey of mobile communication device (MCD) use in 18 Texas cities. The survey design will be modeled after the statewide MCD survey, which is a survey protocol very similar to the National Highway Traffic Safety Administration's (NHTSA) National Occupant Protection Use Survey (NOPUS), which includes an electronic device use component. The 2020/21 Texas survey is designed to provide a valid comparison of urban area MCD use with statewide use, and to establish a baseline for urban area comparisons in subsequent years.

Definitions

The TTI urban survey will include three categories of MCD use.

Cell Phone Use

- Driver holding phone to their ear while driving

If the driver is holding a phone, and is talking into or appears to be listening to the phone, they will be considered as using a MCD, regardless of the position of the phone in relation to the driver's ear. In other words, the phone may be in front of their mouth or face, or to the side of their head. The qualifying determination will be if the driver is talking or listening to the device. (Note this does not include any hands-free phone devices.)

- Driver speaking with visible headsets on while driving

The observer will record MCD use if the driver is speaking into a headset with a microphone. The observer must see the driver speaking, and the presence alone of a headset or Bluetooth device does not constitute use. As in the NOPUS survey, it is possible that a driver speaking with a headset and microphone or Bluetooth may not be actively using the electronic device (i.e., if they are singing or talking to a passenger). Observers will attempt to discern and discount behavior that is obviously not talking or is directed toward someone else in the vehicle rather than into the device. Otherwise, speaking with visible headsets on will be counted as MCD use.

Texting

- Observers will record drivers in the act of texting or using keyboard function on cell phones
- Observers will record drivers in the act of reading a cell phone screen

Other Electronic Manipulation

- Observers will record drivers using electronic devices other than cell phones to receive or send information. Examples include hand-held GPS devices, iPad or similar non-phone computer devices, Kindles, etc.
- Manipulation of devices via dashboard, steering wheel, or other controls will not be included. Driver needs to be holding the device to be considered using it.

Data To Be Collected

MCD use will be recorded for drivers only.

All passenger vehicles will be included in the survey, with no exceptions for commercially marked or government vehicles. A passenger vehicle is any vehicle that is **not**: a public transportation vehicle (city/school bus, transport van such as airport limo or similar vehicle greater than 15-passenger capacity), a motor home, a farm implement, a military vehicle (such as a tank or cargo hauler), panel trucks, motorcycles, ambulances, and 18-wheelers. Note on the data sheet if a vehicle is a uniformed law enforcement officer or driver in a marked law enforcement vehicle, or if the vehicle is an EMS marked vehicle (not including ambulances).

Survey data will include gender, estimated age (under 20; 20-65; and over 65 years), race/ethnicity (Anglo, African American, Hispanic, Asian, and other Non-White), and vehicle type (limited to car versus pickup). The presence of a front seat passenger will be noted. The status of the vehicle as moving or stopped will be noted.

Collect data for 200 vehicles at each site.

Schedule

Observers will follow a schedule that indicates the day, start time, intersection name, site number, and direction of travel for observations. Substitutions of days and start times are not acceptable.

Each city will have six (6) data collection sites. One site will be scheduled for morning peak travel (rush hour), and one for afternoon peak travel (rush hour). The remaining four sites will be scheduled between the two peak periods. All sites will be surveyed on weekdays, Monday through Friday morning, not on State or Federal holidays, or on local holidays during which public schools and city offices are closed.

Instructions for Recording Written Data

Complete site information at the top of the first data sheet of the set. On subsequent pages, name, city, and site number is sufficient. For the date, include month, day, year, and the day of the week. For Site, indicate the site number. The Primary Leg is the intersection street with the highest volume (larger quota for data) and the Secondary Leg is the intersection street with lower volume from which data is taken.

Put a check in the first column if the vehicle observed is stopped. Stopped is defined as no wheel movement.

Under the Driver heading in the 3 age group columns, use F or M to denote female or male in the age category you estimate the driver to be. Next add capital B, H, A, or N to denote Black, Hispanic, Asian, or other Non-white (Middle Eastern or Indian). White is the default and a W does not have to be recorded. At sites in which Hispanics or Blacks are the majority drivers, H or B can be the default and W is used for White. If a change to the default W is made, make a notation on the top of the form.

Add a circled capital "H" adjacent to the driver demographics if the driver is observed holding an MCD but is NOT manipulating the device.

Put a check in the Pickup column if the vehicle has a cargo bed separate from the passenger compartment.

Put a check in the column or columns that describe(s) the MCD action(s) of the driver.

Put a check in the passenger column if there is a passenger in the front seat.

Observation Procedure

Using the same quota sampling design as the 18-city occupant restraint survey, observers will collect data for 200 vehicles at six sites in each city.

Begin data collection at the scheduled time for through or turning traffic in the nearest curb lane for the busiest leg of the intersection, as indicated on the site list/schedule. Collect data from the busiest leg of the arterial street for the number of vehicles specified on the site list/schedule. Once the first leg is completed, collect data for the secondary leg for the number of vehicles specified on the site list/schedule. If two observers are available, it is acceptable to collect data simultaneously on the two intersection legs. It is not acceptable for one observer to collect data on both legs simultaneously or for any lane other than the curb lane.

Survey stopping and moving vehicles from a stationary position at the intersection. From the stationary position survey a maximum of three vehicles while stopped. Once a vehicle makes a right-turn-on-red, the three stopped vehicles remaining are eligible for the sample observation. The position for observation should be selected such that turn lanes with continuously moving

vehicles are avoided. Generally, this means positioning upstream from the start of the turn lane to collect data from the curb lane prior to branching, or collecting data from the turn lane closer to the intersection if turning vehicles have an opportunity to queue. **Observers should not look across a turn lane to collect data from an inside lane.**

When traffic begins to move, record data for moving traffic as it approaches and moves through the intersection. Record each data element per vehicle before looking up to collect data from the next moving vehicle approaching and entering the intersection in the nearest thru lane to the curb. It is not necessary to include every passing vehicle in the count. It is necessary to accurately and systematically include 200 vehicles in which MCD use or non-use is attainable. If the driver cannot be seen clearly enough to determine MCD use, skip the vehicle and put a tally mark in the Not Sure Column. The only question marks for undetermined designations allowed are for race/ethnicity. Focus on the hands and mouth of the driver. If an act of device use is not seen, the observation is a vehicle with non-use.

Sample Design

The sample for the MCDU survey will come from major intersections with an arterial and a secondary or collector intersecting street, relatively near the six sites used for the occupant restraint survey conducted in the same 18 cities. Please note on the map provided in the survey packet the corners from which data were collected, and identify any helpful or noteworthy landmarks. Also note if any schools or police stations are within view of your site.